

Environmental Protection Agency

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and outer diameter greater than or equal to 2.375 inch.

Tubing systems means piping equal to or less than one half inch diameter as per nominal pipe size.

Turbine meter means a flow meter in which a gas or liquid flow rate through the calibrated tube spins a turbine from which the spin rate is detected and calibrated to measure the fluid flow rate.

Vented emissions means intentional or designed releases of CH₄ or CO₂ containing natural gas or hydrocarbon gas (not including stationary combustion flue gas), including process designed flow to the atmosphere through seals or vent pipes, equipment blowdown for maintenance, and direct venting of gas

used to power equipment (such as pneumatic devices).

Vertical well means a well bore that is primarily vertical but has some unintentional deviation or one or more intentional deviations to enter one or more subsurface targets that are offset horizontally from the surface location, intercepting the targets either vertically or at an angle.

Well testing venting and flaring means venting and/or flaring of natural gas at the time the production rate of a well is determined for regulatory, commercial, or technical purposes. If well testing is conducted immediately after well completion or workover, then it is considered part of well completion or workover.

[75 FR 74488, Nov. 30, 2010, as amended at 76 FR 80590, Dec. 23, 2011]

TABLE W-1A OF SUBPART W—DEFAULT WHOLE GAS EMISSION FACTORS FOR ONSHORE PETROLEUM AND NATURAL GAS PRODUCTION

Onshore petroleum and natural gas production	Emission factor (scf/hour/ component)
Eastern U.S.	
Population Emission Factors—All Components, Gas Service¹	
Valve	0.640
Connector	0.083
Open-ended Line	1.46
Pressure Relief Valve	0.97
Low Continuous Bleed Pneumatic Device Vents ²	1.39
High Continuous Bleed Pneumatic Device Vents ²	37.3
Intermittent Bleed Pneumatic Device Vents ²	13.5
Pneumatic Pumps ³	10.3
Population Emission Factors—All Components, Light Crude Service⁴	
Valve	0.04
Flange	0.002
Connector	0.005
Open-ended Line	0.04
Pump	0.01
Other ⁵	0.23
Population Emission Factors—All Components, Heavy Crude Service⁶	
Valve	0.0004
Flange	0.0007
Connector (other)	0.0002
Open-ended Line	0.004
Other ⁵	0.002
Western U.S.	
Population Emission Factors—All Components, Gas Service¹	
Valve	2.903
Connector	0.396
Open-ended Line	0.748
Pressure Relief Valve	4.631
Low Continuous Bleed Pneumatic Device Vents ²	1.77
High Continuous Bleed Pneumatic Device Vents ²	47.4
Intermittent Bleed Pneumatic Device Vents ²	17.1
Pneumatic Pumps ³	10.3

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Onshore petroleum and natural gas production		Emission factor (scf/hour/ component)
Population Emission Factors—All Components, Light Crude Service⁴		
Valve		0.04
Flange		0.002
Connector		0.005
Open-ended Line		0.04
Pump		0.01
Other ⁵		0.23
Population Emission Factors—All Components, Heavy Crude Service⁶		
Valve		0.0004
Flange		0.0007
Connector (other)		0.0002
Open-ended Line		0.004
Other ⁵		0.002

¹ For multi-phase flow that includes gas, use the gas service emissions factors.
² Emission Factor is in units of "scf/hour/device."
³ Emission Factor is in units of "scf/hour/pump."
⁴ Hydrocarbon liquids greater than or equal to 20°API are considered "light crude."
⁵ "Others" category includes instruments, loading arms, pressure relief valves, stuffing boxes, compressor seals, dump lever arms, and vents.
⁶ Hydrocarbon liquids less than 20°API are considered "heavy crude."

[76 FR 80591, Dec. 23, 2011]

TABLE W-1B TO SUBPART W OF PART 98—DEFAULT AVERAGE COMPONENT COUNTS FOR MAJOR ONSHORE NATURAL GAS PRODUCTION EQUIPMENT

Major equipment	Valves	Connectors	Open-ended lines	Pressure relief valves
Eastern U.S.				
Wellheads	8	38	0.5	0
Separators	1	6	0	0
Meters/piping	12	45	0	0
Compressors	12	57	0	0
In-line heaters	14	65	2	1
Dehydrators	24	90	2	2
Western U.S.				
Wellheads	11	36	1	0
Separators	34	106	6	2
Meters/piping	14	51	1	1
Compressors	73	179	3	4
In-line heaters	14	65	2	1
Dehydrators	24	90	2	2

TABLE W-1C TO SUBPART W OF PART 98—DEFAULT AVERAGE COMPONENT COUNTS FOR MAJOR CRUDE OIL PRODUCTION EQUIPMENT

Major equipment	Valves	Flanges	Connectors	Open-ended lines	Other components
Eastern U.S.					
Wellhead	5	10	4	0	1
Separator	6	12	10	0	0
Heater-treater	8	12	20	0	0
Header	5	10	4	0	0
Western U.S.					
Wellhead	5	10	4	0	1
Separator	6	12	10	0	0
Heater-treater	8	12	20	0	0
Header	5	10	4	0	0

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TABLE W-1D OF SUBPART W OF PART 98—
DESIGNATION OF EASTERN AND WESTERN U.S.

Eastern U.S.	Western U.S.
Connecticut	Alabama
Delaware	Alaska
Florida	Arizona
Georgia	Arkansas
Illinois	California
Indiana	Colorado
Kentucky	Hawaii
Maine	Idaho
Maryland	Iowa
Massachusetts	Kansas
Michigan	Louisiana
New Hampshire	Minnesota
New Jersey	Mississippi
New York	Missouri

TABLE W-1D OF SUBPART W OF PART 98—
DESIGNATION OF EASTERN AND WESTERN
U.S.—Continued

Eastern U.S.	Western U.S.
North Carolina	Montana
Ohio	Nebraska
Pennsylvania	Nevada
Rhode Island	New Mexico
South Carolina	North Dakota
Tennessee	Oklahoma
Vermont	Oregon
Virginia	South Dakota
West Virginia	Texas
Wisconsin	Utah
.....	Washington
.....	Wyoming

TABLE W-2 OF SUBPART W—DEFAULT TOTAL HYDROCARBON EMISSION FACTORS FOR
ONSHORE NATURAL GAS PROCESSING

Onshore natural gas processing plants	Emission factor (scf/hour/ component)
Leaker Emission Factors—Compressor Components, Gas Service	
Valve ¹	14.84
Connector	5.59
Open-Ended Line	17.27
Pressure Relief Valve	39.66
Meter	19.33
Leaker Emission Factors—Non-Compressor Components, Gas Service	
Valve ¹	6.42
Connector	5.71
Open-Ended Line	11.27
Pressure Relief Valve	2.01
Meter	2.93

¹ Valves include control valves, block valves and regulator valves.

[76 FR 80592, Dec. 23, 2011]

TABLE W-3 OF SUBPART W—DEFAULT TOTAL HYDROCARBON EMISSION FACTORS FOR
ONSHORE NATURAL GAS TRANSMISSION COMPRESSION

Onshore natural gas transmission compression	Emission factor (scf/hour/ component)
Leaker Emission Factors—Compressor Components, Gas Service	
Valve ¹	14.84
Connector	5.59
Open-Ended Line	17.27
Pressure Relief Valve	39.66
Meter	19.33
Leaker Emission Factors—Non-Compressor Components, Gas Service	
Valve ¹	6.42
Connector	5.71
Open-Ended Line	11.27
Pressure Relief Valve	2.01
Meter	2.93
Population Emission Factors—Gas Service	
Low Continuous Bleed Pneumatic Device Vents ²	1.37
High Continuous Bleed Pneumatic Device Vents ²	18.20